REMARKS

It is noted that claims 1-16 were pending in the application at the time the application became abandoned unintentionally, and that all of the claims stand rejected, which rejection was made Final. It is further noted that the prior rejection on 35 U.S.C. § 112 has been withdrawn, and that the May 2, 2000 Office Action does not specifically reject claims 8 and 11-15 on their merits. A Petition to revive the subject application based on unintentional abandonment under 37 C.F.R. 1.137(b) is being filed simultaneously herewith.

Independent claims 1 and 16 have been amended in a manner believed to more clearly distinguish over the references of record and, along with dependent claims 2-15 and new claim 17, are believed to be in condition for allowance, as discussed below.

On the merits, claims 1-7 and 16 stand rejected under 35 U.S.C. § 102(b) as being anticipated by the cited Dransfield et al. reference as set forth on page 2 of the outstanding Office Action. Applicants' claim 1 has been amended to call for the elastic energy accumulator as including a member having a plurality of interconnected sections of different diameters and defining a first end directed towards the geographical specimen and an opposite second end directed away from the geographical specimen. Amended claim 1 calls for means supporting the accumulator member so that the first end is adapted to act on the geological test specimen and movement of the member in a direction away from the specimen is resisted when the member is preloaded in a direction away from the specimen by actuator means cooperative with the second end of the accumulator member. Amended claim 1 further calls for this arrangement as being such that the preload force is quelled suddenly by triggering an explosive means cooperative with the second end of the accumulator member so that the member is released into impact or energy transfer with the geological specimen, thereby transmitting a seismic wave to the geological specimen.

Significant differences exist between applicants' claimed seismic wave simulation apparatus and the apparatus for generating seismic waves disclosed in the cited Dransfield et al. reference. The energy accumulator member called for in applicants' amended claim 1, and also in method claim 16, is defined as having a plurality of interconnected sections of different diameters and includes means supporting the member so that the first end is adapted to act on the geological test specimen and movement of the member in a direction away from the specimen is resisted when the member is preloaded in a direction away from the specimen by actuator means cooperative with the second end of the member. An elastic deformation energy is created in applicants' accumulator member by preloading the accumulator member as a result of elastic deformation energy generated by holding one end of applicants' accumulator member and pulling the other end of the accumulator member which deforms the accumulator member in its elastic domain.

The Dransfield et al. reference neither teaches nor suggests preloading of the Dransfield et al. gun assembly 10. As specifically disclosed in Col. 8, line 59, and ending in Col. 9, line 10, of Dransfield et al., when the desired charge or quantity and pressure of combustion fuel is introduced into the combustion chamber 36, it is ignited near the top of the gas conducting tube 66 or elsewhere along the length of the inlet tube 68. The combustion then traverses the flexible tube 68 and the gas conducting tube 66 to ignite the fuel within the combustion chamber 36 which causes expansion thereof to exert a downward force upon the bottom 24 of the cylinder 20 which the carries the entire mass of the cylinder 20 and bottom 24 into contact with the ground 142 to thereby generate the acoustic or seismic wave 144 in the ground. At the same time, the piston assembly moves upwardly encountering practically no resistance from the catcher mechanism 11 and its unidirectional shock absorber as 130 and 132. In short, the Dransfield et al. seismic wave generating wave apparatus neither teaches nor suggests preloading of the gun

assembly 10 in a direction away from the surface at which the acoustic or seismic wave is desired to be generated and does not suddenly quell a preload force by triggering an explosive means cooperative with the second or upper end of the gun assembly 10 so that the piston mass 24 is released into impact or energy transfer with the ground 142 to thereby generate an acoustic or seismic wave in the ground. The Dransfield et al. reference clearly does not provide for preloading or support an elastic energy accumulator member so as to prevent or resist movement away from the ground specimen when preloaded.

The nature of the potential energy accumulated in the variable diameter energy accumulator member called for in applicants' claims 1-16 is the elastic deformation energy generated by holding one end of the accumulator member near the geological specimen and the pulling the other end of the accumulator member so as to deform the accumulator member in the elastic domain. Sudden quelling of the preload force that deforms applicants' accumulator member releases the member into impact or energy transfer with the geological specimen thereby transmitting a seismic wave to the specimen. The nature of the energy in the Dransfield et al. apparatus, on the other hand, is the gas pressure caused by fuel combustion. Another significant difference is that triggering applicants' explosive means cooperative with the upper or second end of the accumulator member, as called for in applicants' claims 1 and 16, initiates accumulated energy release. In the Dransfield et al. apparatus, the fuel combustion is contemporaneous with the phase of energy pulse production.

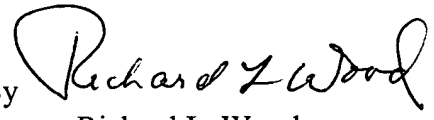
It is respectfully submitted that the Dransfield et al. apparatus does not effect an accumulation of energy and successive controlled energy release. Rather, there is contemporaneous generation and release of energy. This is significantly different than applicants' claimed seismic wave simulation apparatus and method. For these reasons, the Dransfield et al. reference must fail as an anticipatory reference under 35 U.S.C. § 102(b).

Claims 9 and 10 stand rejected under 35 U.S.C. § 103(a) on the cited Dransfield et al. reference. Claims 9 and 10 depend from amended claim 1 and are therefore believed to be allowable for the reasons set forth above in respect to claim 1. More particularly, there is no teaching, suggestion or motivation in the cited Dransfield et al. reference that would suggest to one of ordinary skill in the art how to modify the Dransfield et al. reference in a manner to obtain applicants' claimed seismic wave simulation apparatus.

For the foregoing reasons, allowance of applicants' claims 1-17, as now presented, is believed to be in order and such action is earnestly solicited. Should the Examiner believe that a telephone conference would facilitate further prosecution of the subject patent application, it is respectfully requested that he telephone applicants' undersigned attorney.

Respectfully submitted,

WELSH & KATZ, LTD.

By 

Richard L. Wood
Registration No. 22,839

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WELSH & KATZ, LTD.
120 South Riverside Plaza, 22nd Floor
Chicago, Illinois 60606
Phone: (312) 655-1500
Fax: (312) 655-1501